

IN THE CLAIMS:

Please enter the flowing listing of the claims in lieu of the non-compliant amendments made in the communication mailed March 30, 2005. All claim amendments and cancellations are made without prejudice or disclaimer.

1-19. (Canceled)

20. (Currently amended) A method of transposon-mediated mutagenesis in a *C. elegans* genome, comprising:

- a. introducing a transgene construct into the *C. elegans* genome, wherein the construct comprises a transposase gene which is operably linked to a regulable expression control element and a 3' untranslated region of a gene that is expressed in the *C. elegans* germline; and
- b. expressing the transposase gene, such that a transposon in the *C. elegans* genome transposes, causing a mutation in the *C. elegans* germline.

21-34. (Canceled)

35. (Original) The method of Claim 20, wherein the transposons comprise heterologous transposons.

36. (Original) The method of Claim 35, wherein the heterologous transposons are introduced in the *C. elegans* genome.

37-67. (Canceled)

68. (Withdrawn) A method of inducing transposition of a heterologous transposon in a *C. elegans* organism, said method comprising:  
introducing a transposase gene operably linked to an expression control element into a *C. elegans* organism;  
introducing a heterologous transposon into said *C. elegans* organism;  
expressing said transposase gene to produce a transposase; and  
inducing transposition of said heterologous transposon by said transposase in said *C. elegans* organism.
69. (Withdrawn) The method according to claim 77, further comprising reducing tandem repeats in an array comprising said transposase gene.
70. (Withdrawn) The method according to claim 78, wherein said array is integrated.
71. (Withdrawn) The method according to claim 77, wherein said expression control element comprises an inducible promoter.
72. (Withdrawn) The method according to claim 80, wherein said expression control element comprises a heat shock promoter.
73. (Withdrawn) The method according to claim 77, wherein expressing said transposase gene in said *C. elegans* organism occurs during germline development in said *C. elegans* organism.
74. (Withdrawn) The method according to claim 77, further comprising engineering said transposase gene to allow efficient expression in *C. elegans*.
75. (Withdrawn) The method according to claim 83, wherein engineering said transposase gene to allow efficient expression in *C. elegans* comprises introducing an artificial intron in said transposase gene.

76. (Withdrawn) The method according to claim 77, wherein said expression control element is selected from the group consisting of a *ced-9* promoter, a *glh-2* promoter, a *myo-3* promoter and a *hsp-16-48* promoter.
77. (Withdrawn) The method according to claim 82, wherein said expression control element comprises a promoter selected from the group consisting of *ced-9*, *glh-2* and *hsp-16-48*.
78. (Withdrawn) The method according to claim 82, wherein said expression control element comprises a heat shock promoter.
79. (Withdrawn) The method according to claim 77, wherein introducing a transposase gene further comprises producing an integrated array in said *C. elegans*.
80. (Withdrawn) The method according to claim 77, further comprising introducing a FRT recombination site in said heterologous transposon.
81. (Withdrawn) The method according to claim 77, further comprising introducing a gene encoding a FLP recombinase in said heterologous transposon.
82. (Withdrawn) The method according to claim 77, wherein said heterologous transposon comprises a gene for selecting or screening of said *C. elegans* organism.
83. (Withdrawn) The method according to claim 77, wherein said heterologous transposon is selected from the group consisting of *Mos-1* or *Autmar*.
84. (Withdrawn) The method according to claim 77, wherein expressing said transposase gene comprises expressing a *Mos* or *Himar1* transposase gene.

85. (Withdrawn) A method of inducing transposition in a *C. elegans* organism, said method comprising:

introducing a transposase gene operably linked to an expression control element into a *C. elegans* organism;

expressing said transposase gene in a germline cell to produce a transposase; and

inducing transposition of a transposon by said transposase in said *C. elegans* organism.

86. (Withdrawn) The method according to claim 94, wherein said expression control element comprises an inducible promoter.

87. (Withdrawn) The method according to claim 94, wherein said expression control element is selected from the group consisting of a *ced-9* promoter, a *glh-2* promoter, a *myo-3* promoter and a *hsp-16-48* promoter.

88. (Withdrawn) The method according to claim 96, wherein said expression control element comprises a *glh-2* promoter.

89. (Withdrawn) The method according to claim 97, wherein said expression control element further comprises a *glh-2* 3' untranslated region.

90. (Withdrawn) The method according to claim 98, further comprising reducing tandem repeats in an array comprising said transposase gene.

91. (Withdrawn) The method according to claim 94, wherein said transposon is a heterologous transposon.

92. (Withdrawn) The method according to claim 100, wherein said heterologous transposon is a *Mos-1* or *Autmar* transposon.

93. (Withdrawn) The method according to claim 100, wherein expressing said transposase gene in a germline cell comprises expressing a *Mos* or *Himar1* transposase.
94. (Withdrawn) The method according to claim 101, wherein said heterologous transposon comprises a gene for selecting or screening of said *C. elegans* organism.
95. (Withdrawn) The method according to claim 101, wherein said expression control element comprises a heat shock promoter.
96. (Withdrawn) The method according to claim 94, wherein said transposase gene is a TC3A transposase gene.
97. (Withdrawn) The method according to claim 94, wherein introducing a transposase gene operably linked to an expression control element into a *C. elegans* organism further comprises integrating an array.
98. (Withdrawn) The method according to claim 94, further comprising introducing a FRT recombination site in said heterologous transposon.
99. (Withdrawn) The method according to claim 94, further comprising introducing a gene encoding a FLP recombinase in said heterologous transposon.
100. (Withdrawn) The method according to claim 94, further comprising engineering said transposase gene to allow efficient expression in said *C. elegans* organism.
101. (Withdrawn) The method according to claim 109, wherein engineering said transposase gene to allow efficient expression in said *C. elegans* organism comprises, introducing an artificial intron in said transposase gene.
- 102-126. (Canceled)

127. (New) The method of Claim 20, wherein the transposons comprise endogenous transposons.
128. (New) The method of Claim 127, wherein the transposons comprise Tc3 transposons.
129. (New) The method of Claim 20, wherein the transposase gene is a TC3A transposase gene.
130. (New) The method of Claim 128, wherein the transposase gene is a TC3A transposase gene.
131. (New) The method of Claim 127, wherein the regulable expression control element is an inducible promoter.
132. (New) The method of Claim 131, wherein the promoter comprises a heat-shock promoter.
133. (New) The method of Claim 131, wherein the promoter comprises a tetracycline-regulated promoter.
134. (New) The method of Claim 20, wherein the construct is substantially free of bacterial plasmid DNA sequences.
135. (New) The method of Claim 20, wherein the construct is substantially free of repeated DNA sequences.

136. (New) The method of Claim 20, wherein the 3' untranslated region comprises a *glh-2* 3' untranslated region.
137. (New) The method of Claim 136, wherein the regulable expression control element comprises a heat-shock promoter.
138. (New) The method of Claim 136, wherein the regulable expression control element comprises a *glh-2* promoter.
139. (New) The method of Claim 20, further comprising introduction of one or more additional copies of an endogenous transposon into the *C. elegans* germline.
140. (New) The method of Claim 139, wherein the endogenous transposon is a Tc3 transposon.
141. (New) The method of Claim 35, wherein the transposons comprise *Mos 1* transposons.
142. (New) The method of Claim 35, wherein the transposase gene comprises restriction sites 5' of the start codon, restriction sites 5' of the stop codon, and an artificial intron in the transposase gene open reading frame.
143. (New) The method of Claim 35, wherein the regulable expression control element is an inducible promoter.
144. (New) The method of Claim 143, wherein the promoter comprises a heat-shock promoter.

145. (New) The method of Claim 143, wherein the promoter comprises a tetracycline-regulated promoter.
146. (New) The method of Claim 35, wherein the construct is substantially free of bacterial plasmid DNA sequences.
147. (New) The method of Claim 35, wherein the construct is substantially free of repeated DNA sequences.
148. (New) The method of Claim 35, wherein the 3' untranslated region comprises a *glh-2* 3' untranslated region.
149. (New) The method of Claim 148, wherein the regulable expression control element comprises a heat-shock promoter.
150. (New) The method of Claim 148, wherein the regulable expression control element comprises a *glh-2* promoter.